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Citizen Trust Development for E-Government Adoption: Case of Singapore

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Abstract

Though nations across the world are realizing the importance of e-Government, its successful adoption and acceptance by citizens still remains an elusive phenomenon. Citizen trust on e-Government, which appears to be a major contributor for e-Government adoption and acceptance, has not been fully explored by researchers and governments. In this study, we use the theoretical lens of 'citizen trust' to understand the ways in which it can be engendered to promote e-Government success. Based on a theoretical synthesis, we identify two dimensions of citizen's trust on e-Government: trust on government's ability, motivation and commitment for e-Government and trust on the enabling technologies. Using the case study of e-Government implementation in Singapore, we examine the process by which Singapore government is promoting and maintaining trust for e-Government among its citizens. A careful analysis reveals that Singapore is systematically addressing both the dimensions of citizen trust, which offer a set of lessons learned for other nations to emulate. 'Citizen trust on the government' is being engendered in Singapore by putting institutional trust building measures in place, taking feedback from citizens and having top leadership commitment and support for e-Government. 'Citizen trust on the technology' is being engendered in Singapore by proactive provision of relevant knowledge and skills and providing a comprehensive and effective legal system. These trust building measures, leading to successful e-Government adoption and acceptance, serve as a guide that can be used by nations across the world to facilitate successful e-Government implementation.

Keywords: e-Government, Singapore, Trust, Citizen

1. Introduction

Nations across the world are recognizing the importance of e-Government for providing efficient and effective governance to its citizens and businesses.

> *"Electronic government (e-Government) enables high performance. It enables better outcomes for less cost—maximum value from every resource expended. It provides an avenue for enhanced or entirely new customer services—services that may not even have been imagined yet. In the process it helps governments transform service delivery, so that they meet their obligations to their stakeholders in the most efficient and cost-effective way possible"* (Accenture, 2004, p.2).

E-Government has been defined and conceptualized in different ways in literature. Some definitions view e-Government from a narrow perspective of using ICTs and the Internet to improve the efficiency of the government systems, while others view it from a broader perspective of system reform and government process reengineering (Grant and Chau, 2005). E-Government has been defined as the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees (Deloitte Research, 2000). It can also be described as the use of ICTs in all facets of operations of a government organization (Koh and Prybutok, 2003; Hart and Teeter, 2000).

Though e-Government has been recognized as a vital ingredient for efficient and effective governments, its successful acceptance and adoption by citizens still remains an elusive phenomenon. It is common knowledge that adoption of a technological initiative for the convenience of citizens will depend on two important prerequisites: citizens' *need* for that particular service and the ability of that technological solution to be able to *satisfy* that need. Past literature on technology adoption has shown that even when these two *prerequisites* are present, adoption of technology may be inhibited by other factors, for example, technology fears (Hsiao, 2003). Extending this argument, in the case of e-Government, the role of *trust* as a key enabler for efficient implementation has been recognized (Accenture, 2004; Srivastava and Teo, 2004; Warkentin, Gefen, Pavlou and Rose, 2002). Accenture (2004) in its recent report on e-Government mentions that high performance in Governments is contingent on the 'public trust and effective collaborations' among the stakeholders.

> *"They hold themselves accountable; they actively accept their role as stewards of the public trust; and they make their operations and results transparent to all. They work in open and collaborative ways, understanding that their organization is part of a larger system, and cultivate working relationships with other agencies, organizations and stakeholders."* (Accenture, 2004, p.2).

Trust has traditionally been one of the crucial enablers in e-commerce, where consumers are exposed to far lesser degrees of dependence and risk compared to e-Government, where the adoption of many of the practices may be a legal obligation (Jarvenpaa and Tractinsky 1999; Gefen 2000). Extrapolating from the case of lesser dependence and lack of control in the business environment, it appears that for the successful adoption of e-Government, establishment of citizen trust is an absolute necessity (Warkentin, Gefen, Pavlou and Rose, 2002; Fukuyama, 1995). Though e-Government promises a service transformation economically, citizens in many countries feel that the outcomes of e-Government initiatives do not commensurate with the effort and resources expended. There are relatively few nations across the world, which have been able to successfully implement and exploit ICTs in governmental working. We posit *citizen trust* as a key enabler for the successful adoption of e-Government initiatives in a nation.

Singapore is one nation which has gone in for phase wise successful implementation of its e-Government initiatives. Singapore's emergence as an e-Government leader is recognized throughout the world and this fact is reflected in the number of international awards and recognitions it received. It is currently ranked second in the world for its government e-services (Brown University, 2004) and is also world number two in government e-leadership (Accenture, 2004).

In this research, first, building from the theoretical origins of trust we explicate the two dimensions of 'citizen's trust development' for e-Government adoption: *trust on government* and *trust on the technology*. Subsequently, we relate these dimensions to the case of Singapore e-Government, to enrich our understanding about the role of *trust* in the process of acceptance and adoption of e-Government initiatives. From this study, *trust* emerges as a useful theoretical lens that can be used by other nations across the world, for understanding and formulating their e-Government initiatives.

2. Literature Review And Theoretical Development

Trust has been defined as "a set of expectations shared by all those in an exchange" (Zucker, 1986). It has a major impact in relationships between transacting groups. Trust is a central defining aspect of many economic and social interactions (Warkentin, Gefen, Pavlou and Rose, 2002). It is believed that the trusted party will behave in a socially responsible manner to meet the expectation of the trusting party (Gefen, 2000; Lewis and Weigert, 1985; Mayer et al. 1995). Trust is an expectation that alleviates the fear, that one's exchange partner will

act opportunistically (Bradach and Eccles, 1989). These definitions take the perspective where the interacting partners are 'individuals or groups'. But the concept of trust has wider implications. It can be used with reference to an object of use, for example, technology. Sitkin and Roth (1993) define trust as a set of expectations that tasks will be accomplished reliably. So in the context of technology, trust on technology, implies, believing that the technology can be used to get the desired task accomplished satisfactorily. In the scenario of e-Government, it emerges that citizens' trust on the government is necessary but not sufficient for its successful adoption and use. Citizens must also have a high level of trust on the technology and its capabilities to facilitate its adoption leading to consequent success. Thus, *citizens' trust*, leading to adoption and use of e-Government systems, has two dimensions: *trust on the governments* and *trust on technology.*

For adopting e-Government processes, citizens must have intention to 'engage in e-Government' which encompasses the intentions to receive and provide information through on-line channels (Warkentin, Gefen, Pavlou and Rose, 2002). C*itizens' trust* plays a very vital role in the adoption and acceptance of e-Government initiatives (Srivastava and Teo, 2004). Thomas and Kilman (1974) model for conflict management which was further extended by Hattori and Lapidus (2004) has been used as the point of departure for the conceptual framework guiding this study. Hattori and Lapidus (2004) in their study, elaborate four kinds of relationships: *collaborative, cooperative, competitive and adversarial*, which exhibit different states of trust among the transacting partners. The four kinds of relationships have different levels of the four attributes of trust: *authenticity, history of fulfillment, the ability to fulfill, and commitment to the relationship* (Solomon and Flores, 2001). For example, a collaborative relationship is 'highly invested' in terms of all the four attributes of trust. This implies that (1) the parties are authentic in their interactions with each other; (2) they have a history of delivering on their promises; (3) they are able to fulfill their responsibilities within the specific domain of action; and (4) they are clearly interested and involved in how their actions will affect each other's well being (Hattori and Lapidus, 2004). But here the trust has been considered only on one dimension of relationship. In the case of e-Government, we extend this model further by conceptualizing technology as a 'transaction partner' for citizens (in addition to government). Orlikowski and Robey (1991) in their study had conceptualized 'technology structures' as separate from 'organizational structures' which were very much a part of the structuration process, influencing the human actors and also getting influenced by them. Technology structures continuously interact with and shape the institutional norms which further influence the human actions. Hence it is appropriate to consider not only 'citizens' trust on government' as a factor for determining citizen action (for adoption of e-Government) but also their 'trust on technology', since technology is an integral part of the e-Government process.

2.1. Theoretical Framework

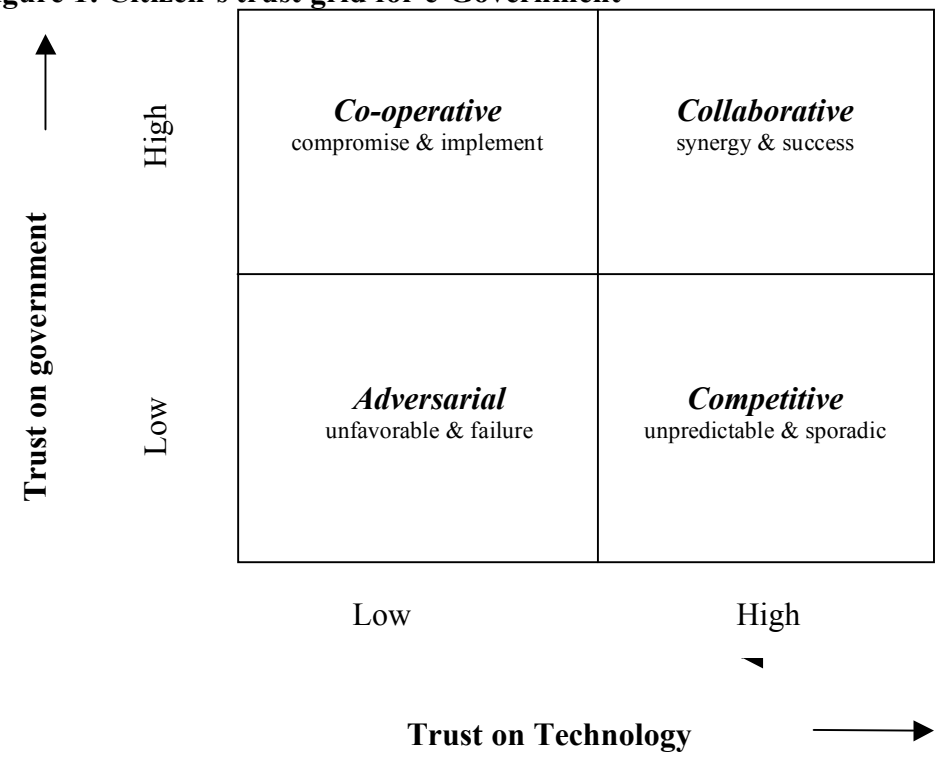
The classification used in the four kinds of relationships in the Hattori and Lapidus (2004) framework can be applied in explaining the e-Government trust scenario as shown in Figure 1.

A low level of citizen's trust on the government's ability to implement e-Government initiatives coupled with a low level of citizen's trust on technology will lead to a condition where the citizens are *adversaries* to technology as well as government. In this situation, lack of trust on both dimensions will lead to unfavorable outcomes as regards acceptance of e-Government initiatives. Such a situation is not conducive for the implementation or success of e-Government programs.

A low level of trust on the government coupled with a high level of trust on technology leads to a situation where citizens might use technology as a *competitive* tool against the

government. Implementation of e-Government programs in such a regimen will lead to *unpredictable* and *sporadic* results. In such a scenario, e-Government initiatives by the government, if any, will be viewed with suspicion and cynicism by the citizens.

Figure 1: Citizen's trust grid for e-Government



A high level of trust on the government but a low level of trust on the technology indicates a scenario where the citizens will try to *cooperate* with the government efforts but the lack of their trust on the technology will inhibit this co-operation. The condition is that of *compromise,* if the government implements its e-Government initiatives. Though the citizens co-operate with the government, they are not able to proactively contribute to the e-Government initiatives (due to their lack of trust on technology) hence the full potential will not be realized.

A high level of trust on the government's ability, motivation and commitment for the e-Government programs coupled with a high level of trust on the enabling technologies leads to a *synergy* of the government and citizens. This *collaborative* behavior leads to proactive effort by the citizens as well as government towards the success of e-Government programs.

Though in the above discussion of trust framework, the four quadrants appear to be static snapshots in time, in actual practice, countries evolve from one quadrant to another. It is possible that at the start of the e-Government initiatives a nation may be in a particular quadrant, for example *competitive* or *cooperative*, but through a planned effort they may move towards the *collaborative* quadrant, to enable successful acceptance and adoption of the e-Government initiatives. The *political and technological legacy* of the country determines its initial position in the citizen trust grid at the start of e-Government programs, but nations can chart their future trust development process to facilitate successful adoption and acceptance by their citizens.

3. Citizen Trust Development: Case Of Singapore

From the discussion in the previous sections, *trust* emerges as a major enabler of e-Government acceptance and adoption by citizens. Based on the theoretical framework in this study we trace the citizen trust development process for e-Government implementation in

terms of *lessons learned* from the Singapore experience. Singapore is an interesting case to study because in spite of being devoid of traditional resources, it has been able to achieve a position of excellence in e-Government implementation. We view the e-Government initiatives in Singapore from the theoretical lens of 'trust' and understand how Singapore is progressing on its path of e-Government success. Before moving further into the discussion about the various e-Government trust building initiatives taken by Singapore let us reflect on the ***legacy*** which Singapore had in terms of the two dimensions of trust, at the start of its e-Government action plan in 2000.

Singapore government had taken a substantial number of planned initiatives for economic development and IT implementation before the launch of its e-Government programs. The directed efforts of the government in terms of economic development can be gauged from the fact that Singapore is currently ranked second most competitive economy in the world in "The World Competitiveness Yearbook 2004", published by the International Institute for Management Development[1] (IMD) and seventh most competitive economy in the "Global Competitiveness Report" by World Economic Forum[2] (WEF). Similarly in the field of IT implementation even before the launch of its first e-Government Action Plan (e-GAP) in the year 2000, it had undertaken Civil Service Computerization Plan (CSCP) [1980-1999] and three National IT Plans [The National Computerization Plan, (1980-1985); The National IT Plan, (1986-1991); and IT2000, (1992-1999)] as shown in Table 1.

Table 1: e-Government Legacy in Singapore

National IT Plans	Thrust Area	e-Government	Desired Outcomes
The National Computerization Plan (1980-1985)	Computerize the major functions of the Government – 'start small, scale fast'	Civil Service Computerization Programme (1980-1999)	- Aimed at turning Singapore Government into a world-class exploiter of information technology
The National IT Plan (1986-1991)	Provision of one-stop services through cross-agency linkages – 'one stop, non-stop'		
IT2000 (1992-1999)	To position Singapore as a global IT hub		
InfoComm 21 (2000-2003)	Develop Singapore into a global Infocomm Capital with a thriving and prosperous e-economy and an infocomm-savvy e-society	e-Government Action Plan (2000-2003)	- Reinventing government - Delivering integrated electronic services - Being proactive and responsive - Using ICT to build capabilities and capacities - Innovating with ICT

1 The competitiveness ranking by IMD is based on four categories measuring economic performance, government efficiency, business efficiency and infrastructure. Available at http://www01.imd.ch/

2 Singapore ranks seventh in WEF's widely-quoted Growth Competitiveness Index (GCI), and tenth in the Business Competitiveness Index (BCI). Available at http://www.weforum.org/

Connected Singapore (2003-)	Infocomm technology a true connector-bringing together the power of computing, communications and content, to create new business opportunities, consumer value and cultural experiences	e-Government Action Plan II (2003-2006)	- Delighted customers - Connected citizens - Networked government

Source: Adapted from Singapore e-Government Website

These continued efforts by the government for the economic and technological development of the nation made a profound impact on the citizens. These initiatives helped in the engendering a substantial amount of 'process based citizen trust' (Zucker, 1986) on the government. Thus, at the start of the e-Government initiatives the citizen trust on the government's ability, motivation and commitment towards e-Government initiatives was *high*. In a similar vein the citizens were exposed to a lot of IT systems because of the initiatives of the government. Though they had a general exposure to the background technology, they had no direct experience of interacting with the government - online.
Based on this discussion it can be considered that at the launch of e-Government programs citizens had relatively *low* trust on the specific technologies enabling the e-Government systems. In terms of our framework in Figure 1, Singapore could be placed in the *co-operative quadrant* at the start of their e-Government programs. Thus, at the start of its e-Government programs the Singapore government had two onerous objectives (1) To maintain the high level of trust which the citizens have on the government - as a legacy; and (2) To develop high level of citizens' trust on technologies enabling e-Government, so that it gradually moves from the *co-operative to collaborative quadrant.* Singapore government has taken initiatives in both these directions and is slowly but steadily moving towards a regimen of high trust on both dimensions. The initiatives taken by Singapore government in its effort to move towards the *collaborative quadrant* offer a set of lessons which can be adapted and applied by nations across the world for successful e-Government adoption. In the subsequent sections we offer a set of 'lessons learned' from the Singapore experience, for citizen trust development.

4. Lessons Learned

For achieving a high level of synergy between citizens and government for successful acceptance and adoption of its various e-Government programs, Singapore systematically went about developing trust of citizens on both the dimensions: trust on government and trust on technology. These initiatives offer a set of lessons learned for nations currently grappling with e-Government implementation.

4.1. Development of Trust on Government

Singapore has gone in for a planned phase wise implementation of its e-Government programs. Though the basic vision given by Deputy Prime Minister and Defense Minister Tony Tan in June 2000, *"to be a leading e-Government to better serve the nation in the Digital Economy"* remained the same but the modalities, technologies and plans kept on changing to cater to the growing challenges in e-Government (Singapore E-Government Website, 2005). During the phase wise implementation of its e-Government programs, Singapore proactively incorporated measures to solicit citizen's trust on government's ability, motivation and commitment towards its e-Government programs. The development of this

dimension of trust is an ongoing process (McKnight et al. 1998). The three ways by which Singapore government tried to achieve this objective are: *putting institutional trust building measures in place, taking feedback from citizens* and *having top leadership commitment and support for e-Government.*

Lesson #1: Putting institutional trust building measures in place

As highlighted by Zucker (1986) 'institutional trust' is one of the important trust building mechanisms which can be instrumental in effectively instilling trust among citizens, leading to the success of its e-Government initiatives. Based on the feedback from industry and public, Infocomm Development Authority (IDA) recognized the need for the widespread usage of *trust marks* for boosting the level of trust on e-transactions. The National Trust Council (NTC) was formed on 28 February 2001 with the vision to build public confidence in e-transactions. The NTC implemented the first nationwide TrustMark Programme, namely, TrustSg seal, which could be awarded by the Authorized Code Owners (ACO) to online merchants who adhere to good e-business practices. TrustSg has now become a government sponsored 'institutional trust' building measure for reassuring the public about e-transactions.

The issue of trust also involves privacy and security concerns. Privacy means protecting the possible misuse of the personal information of the citizens that the government collects and security involves protecting the e-Government Websites from the attacks of hackers and crackers and their possible misuse. To be successful, e-Government projects must build trust within the agencies, between agencies, across governments and with businesses, non-government organizations (NGOs) and citizens (CDT, 2002). Singapore has both a strong common law tradition and also statutory provisions to prevent the misuse of personal information. The personal information is protected under a general law of 'duty of confidence' and also under sector specific laws such as the Banking Act, Statistics Act, the Official Secrets Act and the Statutory Bodies and Companies (Protection of Secrecy) Act. The National Internet Advisory Committee (NIAC) released a 'Model Data Protection Code for Private Sector' based on internationally recognized standards which was fine tuned by IDA and NTC in consultation with members of industry and public and promulgated as a 'Model Code' for private sector adoption in December 2002. The importance given to privacy by Singapore Government can be gauged from the fact that the NTC has aligned its TrustSg mark with the principles of the 'Model Code'.

Commenting on the importance of trust and the Singapore Government's resolve to inculcate trust for e-Government services and transactions, the then Deputy Prime Minister (now the Prime Minister) remarked (on the occasion of the launch of eGAP II on 15 July, 2003),

> *"We started a nationwide programme, called TrustSg to boost customer confidence in online transactions. The United Nations has just conferred a Public Service award on our TrustSg programme, which is a vote of confidence in what we are doing".*

Lesson #2: Taking feedback from citizens

Nelson and Cooprider (1996) state the importance of 'mutual influence' as a contributor to the success of information systems (IS) implementation. In any IS planning process 'consultation and user participation' also predicts the effectiveness of such programs, by enhancing the trust of users (Lederer and Mendelow, 1987; Palanisamy and Sushil 2002; Peffers et al. 2003). With this objective in view, Singapore has effectively utililized ICT (information and communication technology) channels to take constructive and positive feedback from the citizens. Citizens are not only beneficiaries of online public services but the ICTs serve to involve citizens in providing feedback, contributing to the policy formulation and review. Government is involving citizens in online discussions on issues of national and international importance through its Feedback Unit (Feedback Unit Website, 2005). The feedback unit helps Singapore government in two ways, *first,* it is able to frequently and proactively seek views and ideas from a wide spectrum of Singaporeans and

second, this process is an effective way for enhancing citizen's trust. Through its website, the government not only seeks the opinions of the citizens on various political issues, legislative bills but also informs them about the latest legislative developments of the Singapore Parliament. The importance of this effort can be gauged from the fact that the feedback received are compiled into a monthly report and sent to the Permanent Secretaries of all the Ministries. According to Mr. Tan Yew Soon, Director of the Feedback Unit,

> *"The aim of bringing more consultation services online is to make it convenient for people to give their views as well as for the Government to reach out to the e-community for feedback"*

Feedback unit has certainly been instrumental in gaining trust of the citizens on the government's initiatives especially towards an e-Government.

Lesson #3: Having top leadership commitment and support for e-Government

For maximum benefit to the organization, electronic commerce needs to be taken as a strategic business decision, not merely a technological one (Goldberg & Sifonis, 1998). The top management support elevates the role of IT in an organization leading to greater business use of Internet (Teo & Too, 2000). Top management support is related positively to innovation adoption in organizations (Meyer & Goes, 1998). It is also an essential prerequisite for successful adoption and implementation of information systems in organizations (Premkumar & King, 1992; Grover, 1993). In a similar way, top leadership support for e-Government programs is essential for soliciting citizen's trust leading to its successful adoption and implementation (Srivastava and Teo, 2004). Realizing this, many governments are coming up with a strategic e-Government agenda for their country to exhibit the top leadership sponsorship for its e-Government programs. The US Government (2002) "E-Government Strategy" aims at providing a simplified delivery of services to citizens. The ambitious UK government agenda is the delivery of integrated services across organizational boundaries through the use of ICT (Oakley, 1999).

The *citizen trust* building initiative on e-Government is influenced to a very large extent by the presence of e-leaders who can realize the benefits of e-Government and "own" the various projects. Leadership vision and support were present since the inception of e-Government program in Singapore; in fact it was the driving force for most of the e-Government initiatives. This is reflected in the statement of the then Prime Minister Goh Chok Tong in November 2001 speaking on the citizen orientation of the e-Government program,

> *"We have to strengthen our social compact-the bond between Government and the people, and between the people themselves"*

The top leadership support is also evident from the emphasis that has been given to the ICTs from the beginning of 1980s. Its National IT Plans and e-Government Action Plans bear a testimony to the political support for the ICT systems in the government. The top leadership sponsorship for e-Government programs is not for a mere application of ICT systems to the government but to use them for re-engineering Government systems. The clear articulation of Singapore's e-Government vision by the top leaders has inspired mindset changes, enhanced citizen's trust and enabled government agencies to understand the move towards e-Government transformation in Singapore (Ke and Wei, 2004). The unflinching support for e-Government initiatives to transform Singapore is reflected in the statement of the then Deputy Prime Minister (now the Prime Minister), Lee Hsien Loong at the launch of e-GAP II on 15 July 2003,

> *"Ultimately, eGAP II is not about IT, but about changing the approach to Government. The default answer to any request is not to say 'no' and preserve the status quo, but to ask why the status quo should remain …. This is the biggest chance we are aiming for, which will go a long way to Remaking Singapore".*

Recently, the launch of Infocomm Security Masterplan (2005-2007) by Singapore government, in which it plans to invest S$38million over the next three years, reaffirms the commitment and support which the top management and its policies have for engendering trust of its citizens and businesses. Speaking on the occasion of Infocomm Security Seminar on 22 February 2005, Deputy Prime Minister, Dr. Tony Tan made it clear to the citizens that a trusted and secure cyber-space was a prime agenda for the government.

> *"Attacks in cyberspace can come fast and furious. We must do all we can to prevent such attacks. Infocomm security is as important in protecting Singapore as is physical security at our borders."*

This wholehearted support and commitment of the top leadership of Singapore, towards its various e-Government initiatives, have gone a long way in enhancing the citizen's trust on e-Government programs, leading to their acceptance and adoption.

4.2. Development of Trust on Technology

Citizen's trust on government is a necessary but not a sufficient condition for the successful adoption and acceptance of e-Government initiatives. The users of these technological initiatives should also trust the enabling 'technology'. The citizen's trust on technology is the second essential dimension of trust for e-Government. Siegrist, Cvetkovich and Roth (2000) mention that citizens perceptions of a technology's risk and benefits are important components of the entire political process, from the initial decisions to developing a technology or product, to the acceptance of management approaches to risk mitigation. Social science research has identified a number of characteristics of hazards correlated to differences in judgments about the riskiness of technologies. Some of them are level of knowledge, uncertainty, voluntariness, newness, catastrophic potential, and control over risk (Slovic, 1987). For the successful adoption of e-Government systems, citizens must be able to see less of risks and more of benefits which they can derive from it. The two ways by which it has engendered in Singapore are: *proactive provision of relevant knowledge and skills* and *providing a comprehensive and effective legal system.*

Lesson #4: Proactive provision of relevant knowledge and skills

Trust and knowledge are closely related to each other. Bridging the digital divide and increasing knowledge about ICT systems and its capabilities leads to its increased use, which in turn increases, the trust on these systems. Development of trust not only involves adoption of secure systems but also involves communicating and educating citizens that such systems are as secure as traditional systems.

Li (2003) concluded that e-Government is more of an organizational change issue involving the citizens as well as the government servants to trust the technology. Lack of education and training to government servants and citizens, about the e-Government systems, may inhibit the development of their trust on related technologies leading to lackadaisical adoption. In such a situation government servants, bureaucrats and also citizens may resist the intended e-Government projects. There may be an inherent fear among government servants that the technology may make them "redundant and powerless". For some, it may be just a case of "technological shyness" but for others, it may mean the creation of more work. Hence, dispelling fears of the government officials and explaining the importance of e-Government programs and their commensurate benefits are of utmost importance to the implementation of any e-Government initiative. Success is possible only by gaining their trust by imparting the right knowledge through meaningful training programs. The InfoComm Education Program (IEP) in Singapore ensures that public officers are equipped with the required ICT skills and knowledge. This is an ongoing program, which ensures that public officers have updated ICT knowledge to enable them exploit the capabilities of ICTs to the maximum for the benefit of citizens and businesses.

Apart from the government officials and political leaders, it is essential for the citizens to understand the potential of e-Government and its utility to them. They also have to learn to use the various electronic methods to be able to use them to their advantage in an e-government environment. Mass e-literacy programs for bridging this digital divide have been adopted by the Singapore government to provide the citizens with the requisite knowledge to be able to make use of e-Government systems. Trust building initiatives for educating and motivating the public to use e-government systems have also been implemented. The concern for bridging the digital divide has been realized by the top echelons of the Government and this is evident from the statement of the then Deputy Prime Minister (now Prime Minister) Lee Hsien Loong at the launch of e-Government Action Plan II on 15 July 2003,

> *"Putting services online is not sufficient. If Singaporeans are not comfortable with computers and the Internet, everything we develop-the IT infrastructure, the portals – will stay idle. We therefore pushed strongly to raise the level of IT literacy, and to provide all Singaporeans with access to computers and the Internet. Our schools are already completely wired up, and so are our national libraries. The People's Association, together with its corporate sponsors, has set up a network of 22 eClubs in housing estates to provide broadband Internet facilities to residents. We have stationed helpers at eClubs to guide users who are unfamiliar with the Internet and Government services that are available online. We started a National Infocomm Literacy Programme, with the Community Clubs offering affordable courses and workshops to residents".*

Lesson #5: Providing a comprehensive and effective legal system

An effective legal system, which assures the security, safety and privacy of citizens and businesses, is vital to the success of any e-Government initiative by building the trust of the citizens for using the technology. The Singapore Government realizes that transparent and market-favorable regulation and legislation are a pre-requisite for the growth of e-society, e-government and e-commerce. In the current digital economy, the legal, regulatory and business environment required for development are significantly different from those for traditional enterprise. Singapore is one of the first countries in the world to formulate and implement stringent cyber laws to enable acceptance and adoption of e-Government efforts by trusting that using the enabling technologies is not risky for them. The presence of effective cyber laws has served as a trust booster and is one of the prime reasons for Singapore being a leader in implementation of e-Government initiatives. Singapore's Electronic Transactions Act (ETA) of 1998, enacted by the Parliament on 29 June 1998, is one of the earliest enactments of a cyber act in the world, that covers not only digital and electronic signatures but also electronic records, electronic contracts and is applicable to all kinds of electronic communications (Basu, 2004). The ETA addresses some of the important issues necessary for providing a conducive cyber-legal environment like: commercial code for e-commerce transactions, use of electronic applications for public sector, liability of network service providers and provision of Public Key Infrastructure[3] (PKI) (IDA Website, 2005). The Evidence Act was also amended in 1997 to permit the use of electronic records as evidence in courts. The Singapore Government has paid special emphasis to the issue of Intellectual Property Rights (IPR) and its Copyright Act was suitably amended in 1999 to improve copyright protection and enforcement measures for copyright owners in the digital

[3] PKI is universally recognized as the most secure platform for e-commerce transactions and addresses all the four elements of network security: authentication, non-repudiation, confidentiality and integrity. It enables ICT network users to exchange digital information securely and confidentially, and refers to the whole system of policies, processes and technologies including digital certificates, certificate servers and Certification Authorities (CAs), required for such an exchange.

environment, thus promoting the use of the Internet for business. The cyber environment is borderless and affords easy anonymity for the cyber criminals; hence the cyber-law enforcement challenges include providing global solutions for preventing as well as detecting cyber attacks and attackers (Henderson, 2003). Singapore Government has been successful in not only enunciating cyber laws but also has an efficient cyber-surveillance system for 'policing the information highway'. The government passed amendments to the Computer Misuse Act in 1998 so that it gives greater power to take preemptive actions against computer terrorism and cyber crimes (Tan, 2003; Jutla, Bodorik and Dhaliwal, 2002).

> *"The amended Act takes a more sophisticated approach to provide for enhanced penalties proportionate to the different levels of potential and actual harm caused. It also addresses new potential computer abuses such as denial or interruption of computer services and unauthorized disclosure of access codes"* (IDA Website, 2004).

Its commitment to enactment of effective cyber laws and trust building measures is visible from its continuous efforts illustrated in Table 2.

Table 2: Legal trust building initiatives by Singapore Government

Initiative	Description
Electronic Transactions Act (ETA)	Enacted in 1998 to provide a legal foundation for electronic signatures and to give predictability and certainty to electronic contracts.
Public Key Infrastructure (PKI) and Licensing of Certification Authority (CA)	PKI, a widely recognized secure platform for e-commerce transactions has been adopted by Singapore Government. CA is a trusted third party that verifies the identity of an applicant registering for a digital certificate. As of 14 June 2002 there was one licensed CA in Singapore: Netrust Pte Ltd.
Consumer Protection	Existing consumer protection laws like multi-level marketing and pyramid selling (prohibition) act, sale of goods act, unfair contract terms act, etc. are being suitably applied for electronic transactions. There is special emphasis on 'personal data protection', trust development by the use of 'trust marks' (TrustSg) and regulation of online content.
Intellectual Property Rights (IPR)	The copyright act has been amended in 1999 to improve enforcement measures for copyright owners in the digital environment to facilitate use of Internet for business.
Computer Misue Act	Enacted in 1998 it takes a sophisticated approach to provide for enhanced penalties proportionate to different levels of potential and actual harm caused. It also addresses new and potential computer abuses like denial or interruption of computer services and unauthorized disclosure of access codes.
Domain Names	Under the IDA act, IDA has the power to authorize or regulate the registration, administration and management of domain names in Singapore. Singapore Network Information Centre (SGNIC) was set up in 1995 to administer the ".sg" domain.

Source: InfoComm Development Authority (IDA) Website (Information Economy)

Singapore has thus been able to effectively generate sufficient amount of citizen's trust on technology.

5. Contributions And Conclusions

E-Government initiatives around the world have often been sporadic and unsystematic. Trust, which is a very important concern for e-Government implementation has often been overlooked by researchers as well as governments. This has resulted in a lesser than the intended impact of e-Government initiatives on citizens as well as governments. Literature on e-Government has also not fully explored the role of trust in e-Government adoption and acceptance. The present study addresses this gap in the literature and based on the case study of Singapore e-Government offers a set of lessons learned for successful adoption of e-Government by the citizens.

This paper offers a number of contributions for the researchers as well as practitioners. ***First,*** literature has viewed e-Government implementation more as a "technological initiative" rather than a "citizen trust building initiative". The *trust perspective*, used as a theoretical lens for understanding this case, brings forth the importance of fostering and developing, citizen trust, for successful e-Government acceptance and adoption. ***Second,*** from the literature on trust and technology, the present study identifies two dimensions of citizen trust in an e-Government scenario: *trust on the government* and *trust on the technology* and discusses plausible positions which governments may take on these dimensions. A theoretical synthesis of the relevant literature indicates that for e-Government adoption and acceptance by citizens, it is imperative to have a high level of citizen trust on both the identified dimensions. ***Third,*** through the case of Singapore, this research demonstrates how 'citizen trust' may be engendered on the two dimensions of trust. Singapore, which is in the process of gradually moving from cooperative to the collaborative quadrant of citizen trust grid (Figure 1) offers a set of ***lessons learned***. The case study indicates how Singapore is proactively addressing the concerns of citizens on both the identified dimensions. 'Citizen trust on the government' is being generated and maintained by *putting institutional trust building measures in place, taking feedback from citizens* and *having top leadership commitment and support for e-Government.* 'Citizen trust on the technology' is being engendered in Singapore by a *proactive provision of relevant knowledge and skills* and *providing a comprehensive and effective legal system.* These trust building measures, leading to successful e-Government adoption and acceptance, can be replicated in other nations.

Though the Singapore e-Government case study offers a number of insights, it has certain limitations, which must also be appreciated for a more realistic understanding of e-Government systems. First, Singapore is a small nation with only one level of Government. The implementation of e-Government systems in a large country with different levels of government (federal, state, districts etc.) may pose different challenges. Second, Singapore is a country where English is the country's major language. This has helped in the proliferation and adoption of ICT systems by the citizens and government. This is in stark contrast to many of the larger countries where English is not the major language. Third, Singapore has a proactive, pragmatic and stable leadership, which may not be the case in most of the other countries, which have frequent change in leaderships, and the initiatives taken by one government may be undone by its successor. In spite of these few limitations, the Singapore case study offers interesting insights in understanding the importance of citizen trust development for the acceptance and adoption of e-Government initiatives.

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